

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2000-356672  
(43)Date of publication of application : 26.12.2000

(51)Int.CI. G01S 5/14  
G01C 21/00  
G08G 1/0969  
H04Q 7/38  
H04M 1/72  
H04M 3/42

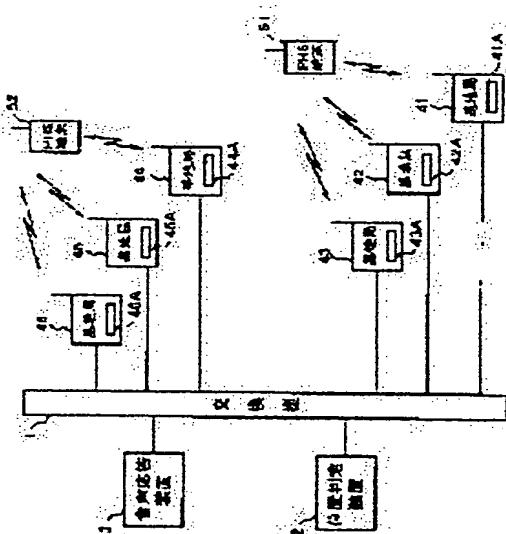
(21)Application number : 11-167661 (71)Applicant : NEC CORP  
(22)Date of filing : 15.06.1999 (72)Inventor : KUMAKURA HIROSHI

**(54) POSITION INFORMATION SERVICE SYSTEM BY USING PHS AND ITS METHOD**

(57) Abstract:

**PROBLEM TO BE SOLVED:** To obtain a position information service system by using a PHS and its method capable of offering the position information service without damaging the portability of the PHS and without an investment of end user, such as a change of a software or the like.

**SOLUTION:** This position information service system by using a PHS relayed by radio by plural base stations 41-46 connected by cables to an exchanger 1 is equipped with measuring parts 41A-46A in the plural base stations 41-46 for measuring radio wave intensities of both a retrieving PHS terminal 51 for retrieving a partner and a retrieved PHS terminal 52 to be retrieved by the retrieving PHS terminal 51, and with a position determination device 2 of the exchanger 1 for inputting the measured radio wave intensities into the exchanger 1 from each of the measuring parts 41A-46A in the plural base stations 41-46, for calculating the positions of the retrieving PHS terminal 51 and the retrieved PHS terminal 52 based on the inputted radio wave intensities and the positions of the plural base stations 41-46, for obtaining the distance between the retrieving PHS terminal 51 and the retrieved PHS terminal 52, and for obtaining the direction of the retrieving PHS terminal 51 relative to the retrieved PHS terminal 52.



## LEGAL STATUS

[Date of request for examination] 23.05.2000

[Date of sending the examiner's decision of rejection] 28.11.2003

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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**(19) Korean Intellectual Property Office (KR)**

**(12) Laid-Open Patent Publication**

(51) Int. Cl.<sup>6</sup>  
G08G 1/0969

(11) Publication No. 1999-0073743  
(43) Publication Date October 5, 1999

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(21) Application No. 10-1998-0006835  
(22) Application Date March 2, 1998

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Request for Examination: Done

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(54) Apparatus of Providing Map Information Services by Using Location Information of  
Mobile Communication Base Station and Method thereof

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**[Abstract]**

**1. Technical field**

The present invention relates to an apparatus of providing map information services by using the location information of a mobile communication base station and a method thereof.

**2. Technical Object**

The present invention is to provide an apparatus of providing map information services and a method thereof, wherein the attitude and the longitude of an adjacent base station from a mobile communication terminal are obtained, and the map information of a cell, in which the base station is placed, is obtained from a map information data base.

**3. Summary of the invention**

The invention comprises a mobile communication terminal for receiving and outputting data; a map information storage means for storing a radius of each sector of base stations and map information; an information processing means for receiving data from the mobile communication terminal to locate a current location thereof, and for receiving the map information on the current location from the map information storage means to output the map information; and a display means for allowing the input from the information processing means to be externally displayed.

**(19) Korean Intellectual Property Office (KR)**

**(12) Laid-Open Patent Publication**

(51) Int. Cl. <sup>6</sup>

G06F 19/00

(11) Publication No. 2000-0007448

(43) Publication Date Feb. 7, 2000

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(21) Application No. 10-1998-0026795

(22) Application Date July 3, 1998

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Request for Examination: Done

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(54) Method for Optimizing Location of Base Station Using Grid with Weighting

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**[Abstract]**

The present invention provides a method for optimizing the location of a base station using a grid with a weighting, comprising the steps of setting a region, where base stations are established, by use of a wireless network design system; computing the number of the base stations required in the region; calculating the optimized locations of the base stations, and automatically installing the base stations, thereby saving human resources and time needed in cell design to obtain economical advantages, implementing the automatic base location optimization to increase users' convenience and performing a parameter tuning function of related system to improve a reliability on the results of the cell design.

**[Representative Drawing]**

Fig. 1